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Los Alamos
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Weapons Program Abstracts

2022 Los Alamos National Laboratory Test and Analysis Abstracts

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Number	Effective Date
LA-UR-22-XXXX	June 14, 2022

	Name	Z #	Title/Org	Date
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Title: Responsiveness, Modernization, and Radiography Test at the Centrifuge Test Facility
Presenter: Renita Walzel, E-14

Abstract:

The Test Engineering group (E-14) at Los Alamos National Laboratory (LANL) was tasked with applying high-g quasi-static load to the Stockpile Responsiveness Program (SRP) and Delivery Environments Program (DE) collaborative test article in both lateral and axial orientations. This test combined multiple test efforts: exercising a new facility capability (radiography), evaluating system response of an unclassified test assembly, and evaluating the response of the Supercell assembly. This test provided many lessons learned due to having multiple stakeholders, developing a new radiography capability, and juggling various requirements.

Title: ***LANL Hostile Blast Testing Capability Development***
Presenter: Alex Cusick, E-14

Abstract:

The LANL blast tube is a facility used to test full weapon assemblies in hostile blast environments. Similar to AWE's ABT, this facility utilizes an internally loaded high explosive driver to produce a shock front intended to simulate a nuclear blast. Previous test suites and recent and ongoing capability development work will be discussed to encourage collaboration with ongoing ABT development at AWE. Future capability goals (in light of current and future systems) and prospective paths forward will be emphasized.

Title: ***Digital Image Correlation Measurement of B61 Center Case Fragmentation Test***
Presenter: Kai Newhouse, E-14

Abstract:

Center case fragmentation due to asymmetric detonation is of interest to the B61 program. This presentation reviews digital image correlation (DIC) measurement collected from a fragmentation test conducted at the Nevada National Security Site (NNSA), a collaborative effort between Los Alamos National Laboratory (LANL) and Sandia National Laboratories (SNL). These data are analyzed for case expansion, radial velocity, and shock front propagation. Improvements for implementation in future testing are discussed.

Title: ***Collaborative Analysis Testing Techniques (CATT) Phase 1***
Presenters: Amanda Farnsworth (Q-19), Ryan Waked (Q-19), Zack Parker (Q-19), John Schultze (E-14)

Abstract:

Collaborative Analysis Testing Techniques (CATT) is a joint program between Los Alamos National Laboratory (LANL) and Atomic Weapons Establishment (AWE) to enhance qualification capabilities by exploring advanced ground testing techniques and supporting analytical models. The initial focus of the program is to evaluate and enhance the Impedance Matched Multi-Axis Test (IMMAT) for use on NEP/NPP qualification efforts. The IMMAT technique was developed at AWE. LANL designed and built the Flight Analysis Test Vehicle – 1st Ground Configuration (FATV-1G) test unit, which closely matched a known flight body. The FATV-1G body required

design and analysis of mock assemblies as well as instrumentation and sensor placement. LANL also designed and executed a modal test to be used in support of the analytical models. Real flight data was used to inform the IMMAT design. AWE contributions included analytical models and the technical knowledge required in order to design and execute IMMAT based on existing flight data.